NICE Evaluator Webinar
March 14, 2012

TRI-AGENCY COMMON EVALUATION FRAMEWORK

WELCOME TO OUR COLLEAGUES FROM NOAA & NSF PROJECTS!

PLEASE NOTE: To reduce the amount of background sound, **please mute your telephones after dialing in by pressing *6** (or by using a manual mute button on your phone). To unmute, press *6 again. Thank you!

NASA Innovations in Climate Education (NICE) Team

Science

Evaluation
(ann.m.martin@nasa.gov)

Project Management

VSGC Team
Admin and Education

Announcements

- Conference session proposal deadlines coming up:
  - AEA - American Evaluation Association (March 16th, several proposals related to common eval framework going in)
    - See http://www.eval.org/eval2012
  - AGU – American Geophysical Union (April 20th, *sessions only*, Climate Literacy session proposals coordinated by the Climate Literacy Network)
    - See http://fallmeeting.agu.org/2012
  - NAAEE – North American Association for Environmental Education (April 25th, *sessions and presentations, with a preceding Environmental Education Research Symposium*)
    - See http://www.naaee.net/conference/call-for-presentations

Agenda

- **Jan Middendorf & Christa Smith**, Kansas State University's Office of Educational Innovation & Evaluation
- **John Baek**, NOAA's Office of Education
- **Frank Niepold**, NOAA's Climate Program Office
- Discussion!

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Developing a Common Evaluation Framework

Jan Middendorf, Director

Christa Smith, Lead Evaluator

Office of Educational Innovation and Evaluation

- Brief History and Overview
- NSF, NOAA, NASA Climate Change Education Common Themes
- Next Steps

Brief History and Overview

- Conversations at 2011 Tri-Agency Climate Change Education Principal Investigators Meeting
- 2011 AEA presentations
- NSF's Dialogue
- NOAA's Focus
- NASA's Interest & Commitment
- "agency-cce-common-eval" listserv

NSF, NOAA, NASA

Commonalities:

- Inform youth and the general public about climate change and the interconnectedness of humans and the environment
- Form partnerships between educators, researchers, and institutions for the purpose of education, research, and community outreach
- Develop opportunities for minorities and underrepresented groups to pursue education, research, and careers in STEM fields
- Utilize new and innovative instructing and learning methods

NSF, NOAA, NASA

Common Evaluation Components:

- Formative and summative evaluation components by an external evaluator
- Specific goals and map a strategic plan to achieve these goals
- Include evidence that the identified goals can be accomplished
- Discuss relevance to climate change and the individual missions
- Specific data collection and analysis procedures to be used


NSF
activities (3) cce (3) ccep-i (4) ccep (7) change (10)
climate (13) development (2) due (3) education (9) impact (4)
include (3) information (4) network (2) nsf (4) partnership (7)
phase (7) program (12) proposals (8) required (4)
resources (3) revised (2) science (3) solicitation (3) support (2) understand (2)
NOAA
activities (50) application (112) content (35) display (64) education (55)
evaluation (54) federal (32) funding (82) grants (61) include (53)
information (72) noaa (165) opportunity (37) program (43) project (152)
proposed (35) provide (35) public (38) required (63) science (56) SOS (41) spherical (51)
submitted (44) support (34) system (86)
NASA
award (187) budget (92) education (283) evaluation (161) funds (100) goals (93)
grants (87) guidebook (108) information (180) institutions (137) nasa (687)
nra (139) nspires (85) objectives (88) plan (104) program (99) project (186) proposal (573)
required (125) research (140) science (120) section (108) stem (151) students (150)
submission (115)

Next Steps

- Continue the conversation
- Spread the word
- Tri-Agency Meeting
- Community of climate change education evaluators

Contact us:

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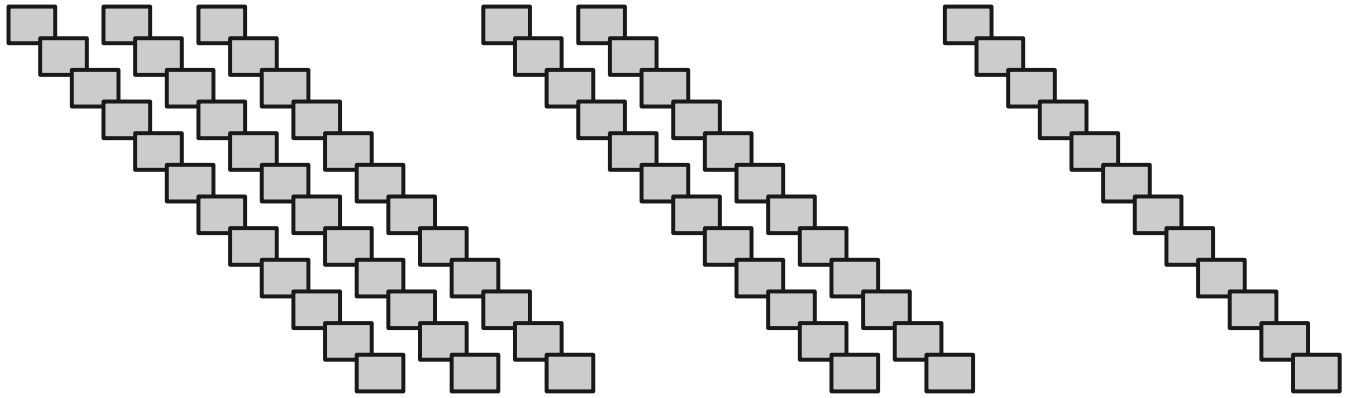
Christa Smith
christas@k-state.edu

A sample common evaluation framework:

Triagency climate change education

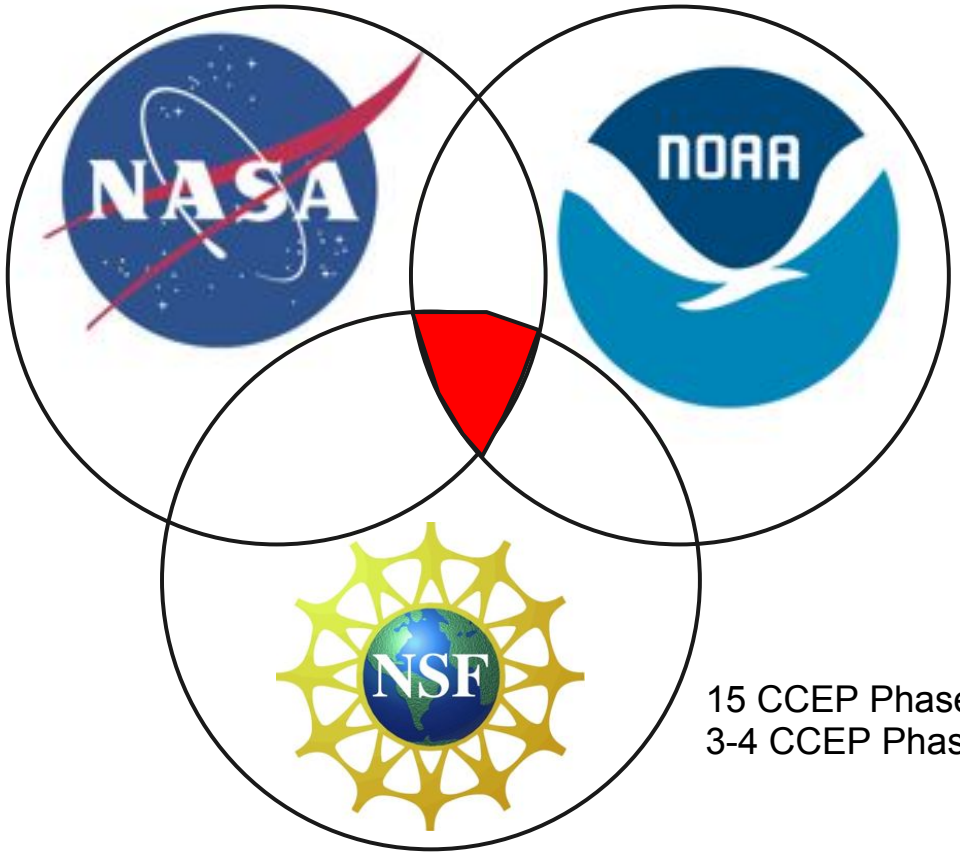
John Y. Baek, PhD, john.baek@noaa.gov
March 14, 2012

Evaluating a portfolio

Portfolio	**Tri-agency Climate Change Education**		
	NASA	**NOAA**	**NSF**
Program	**NICE**	**ELG**	**CCEP**
Projects			

What is "common?"

67 NICE/MUREP

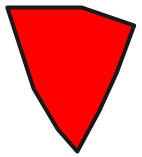


27 ELG

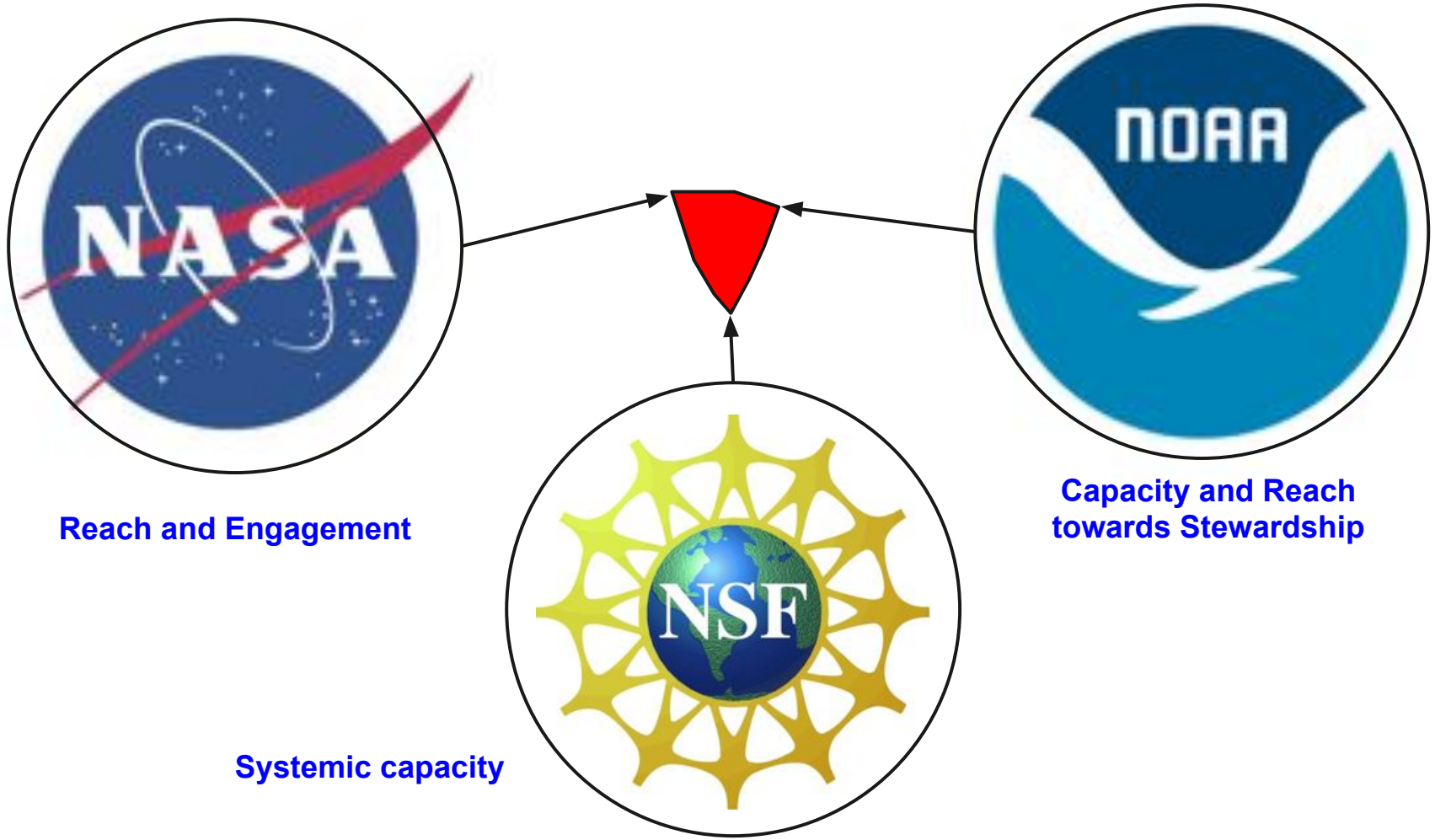
15 CCEP Phase I
3-4 CCEP Phase II

An example "common" outcome

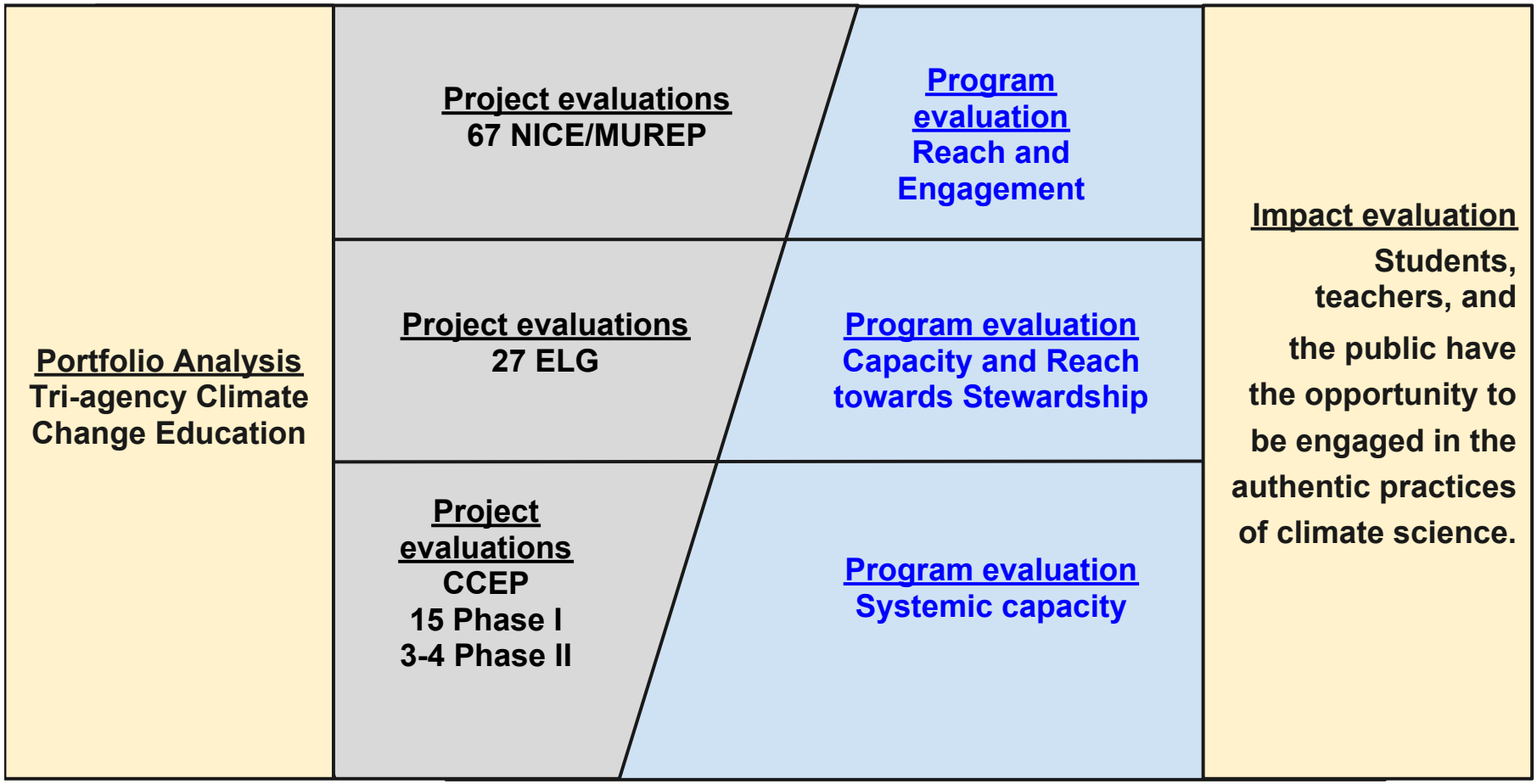
Students, teachers, and the public have the opportunity to be engaged in the authentic practices of climate science.



Unique programs with a "common" contribution



A possible evaluation framework



A sample common evaluation framework:

Triagency climate change education

John Y. Baek, PhD, john.baek@noaa.gov
March 14, 2012

United States Global Change Research Program

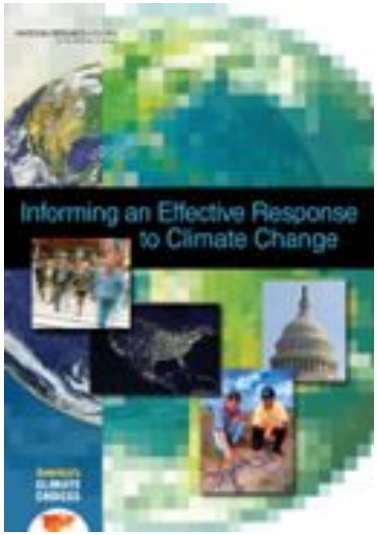
Thoughts on How A Common Evaluation Framework Relates to National Priorities on Climate and Related Education Training and Outreach

Frank Niepold
Climate Education Coordinator
Co-Chair of the Education Interagency Working Group (U.S. GCRP)
NOAA Climate Program Office
frank.niepold@noaa.gov

March 14, 2011

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

America's CLIMATE CHOICES



"Education and communication are among the most powerful tools the nation has to bring hidden hazards to public attention, understanding, and action.

Citizens, governments, and the private sector cannot factor climate change into their decisions without a reasonably accurate understanding of the problem.

To make informed decisions, people must have at least a basic knowledge of the causes, likelihood, and severity of the impacts, and the range, cost, and efficacy of different options to limit or adapt to climate impacts."

http://americasclimatechoices.org/

Strategic Approach: Audience (the who)

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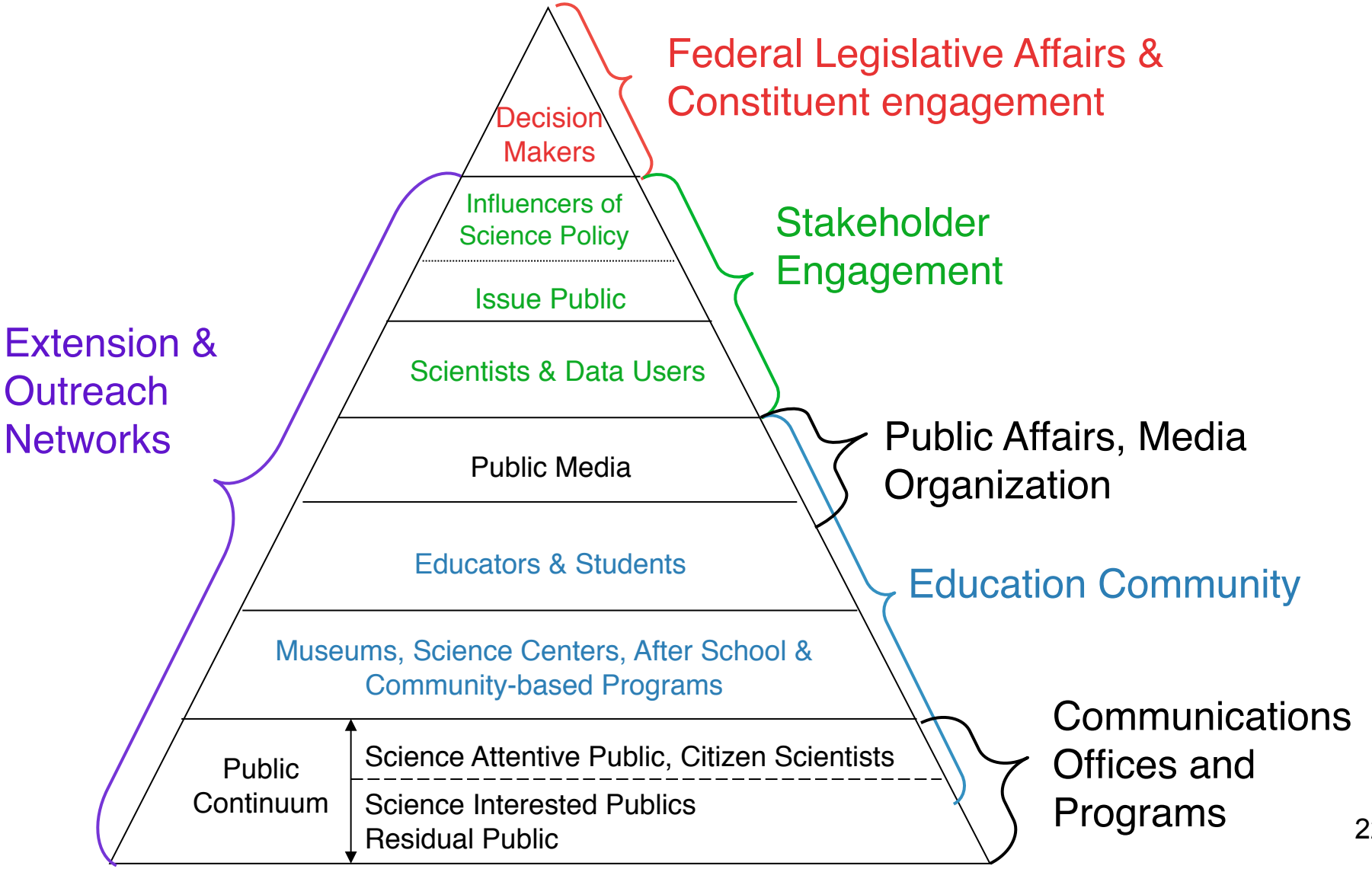

Climate Literacy is…

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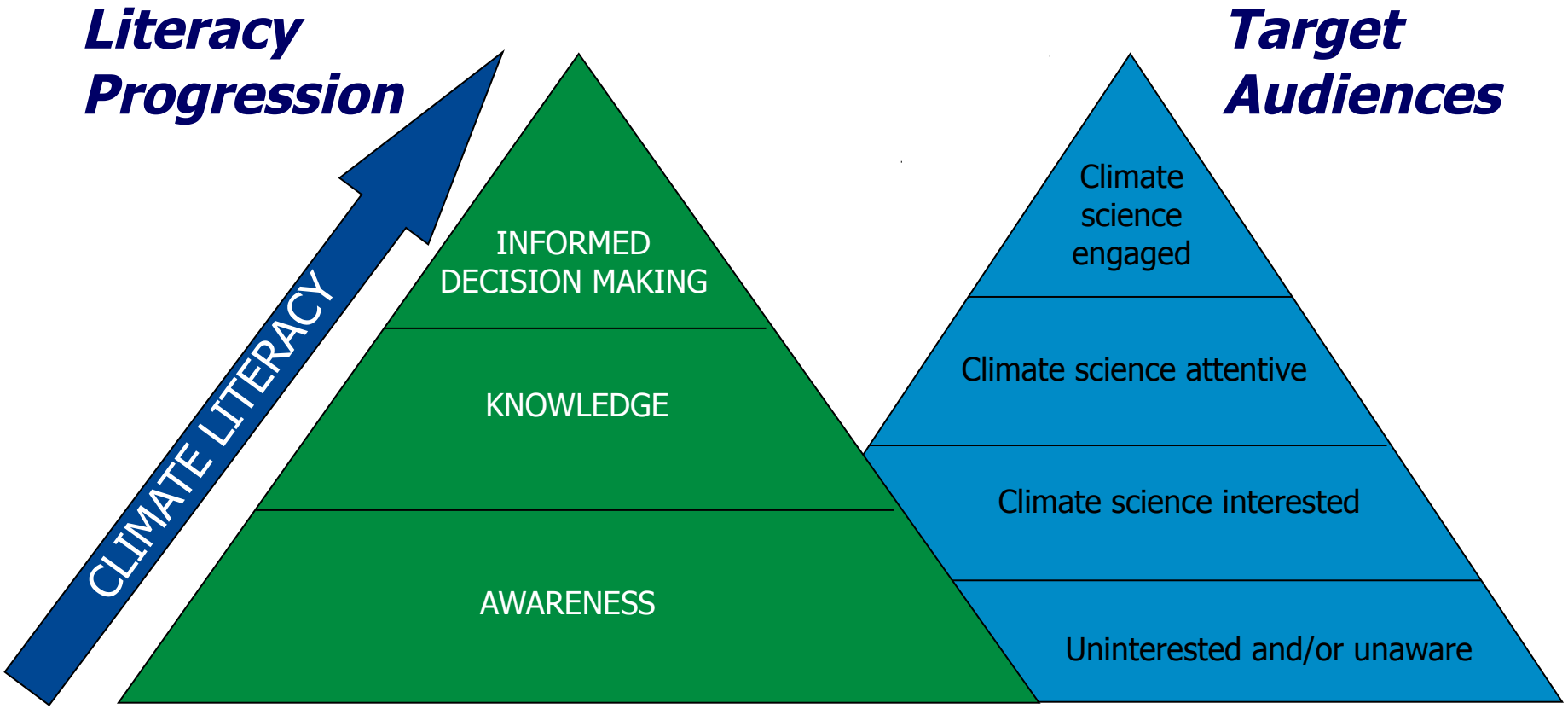
…a continuum of competency



Update: Community Discussion of the Challenges to and Strategies

United States Global Change Research Program

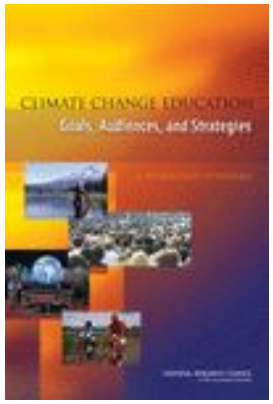
BOARD ON SCIENCE EDUCATION

CENTER FOR EDUCATION

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The purpose of the **Climate Change Education (CCE) Roundtable** is to foster ongoing discussion of the challenges to and strategies for improving public understanding of climate science and climate change among federal agencies, the business community, non-profit, and academic sectors.



Climate Change Education: Goals, Audiences, and Strategies: A Workshop Summary

Pending

Climate Change Education in Elementary School through the First Two Years of College: A Workshop Summary (Pending)

http://www7.nationalacademies.org/bose/Climate_Change_Education_Homepage.html

Climate Change Education, Training and Outreach Challenges (Research Based)

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First, research over the past 15 years has demonstrated that the underlying science of **climate change is inherently difficult for most learners to comprehend** and for educators or schools to competently teach. Furthermore, **the connection between science and society that is implied in climate change education aimed at changing people's behavior makes the task of teaching and learning more difficult still.**

Second, achieving the broad range of goals of climate change education (training and outreach) **requires a cross-disciplinary approach**, blending education with the learning, social, behavioral, and economic sciences as well as earth systems science.

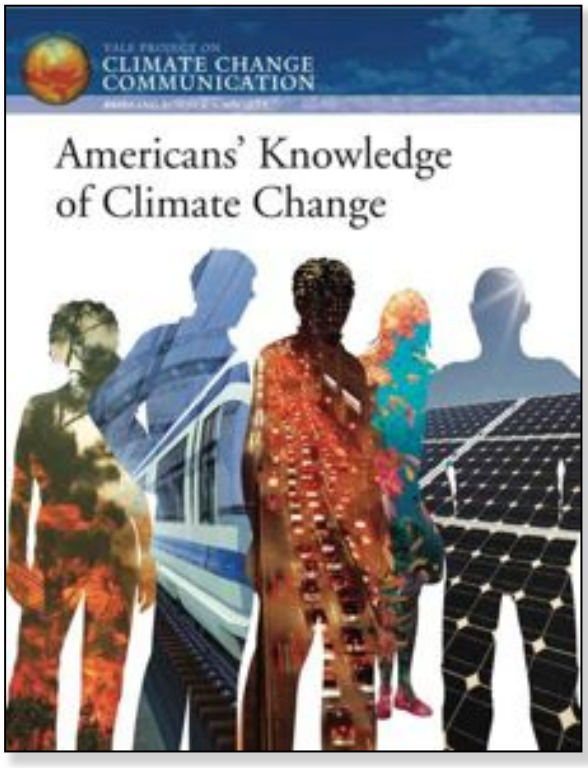
Third, the myriad of federal agencies, nongovernmental organizations, and businesses invested in climate change education may duplicate efforts and waste limited resources without **a forum for coordination, cooperation, and alignment of overall education strategies.**

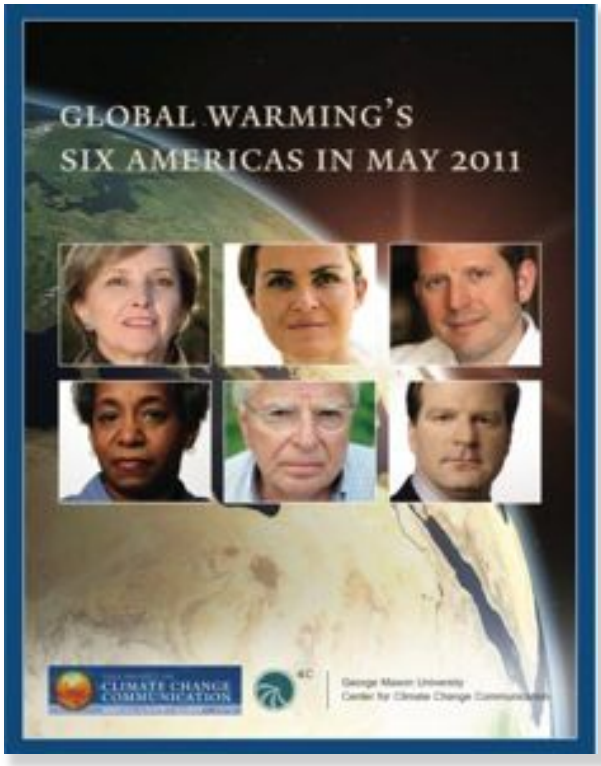
Fourth, like evolution, climate change has become a highly politicized topic in the policy arena and in education, and **people's willingness to be educated or to learn depends on their attitude toward the issue itself.**

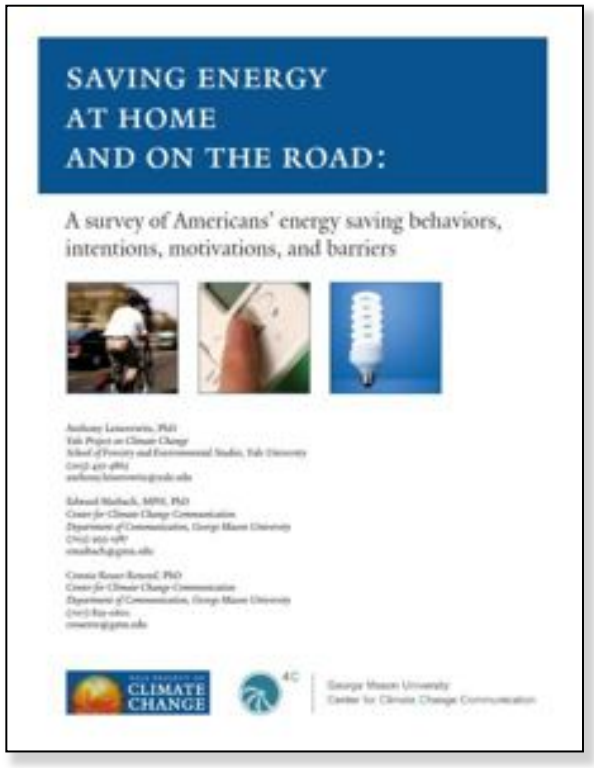
NRC Climate Change Education: Goals, Audiences, and Strategies: A Workshop Summary, 2011

Key Update: Monitoring public understanding of climate literacy

YALE PROJECT ON
CLIMATE CHANGE
COMMUNICATION
BRIDGING SCIENCE + SOCIETY

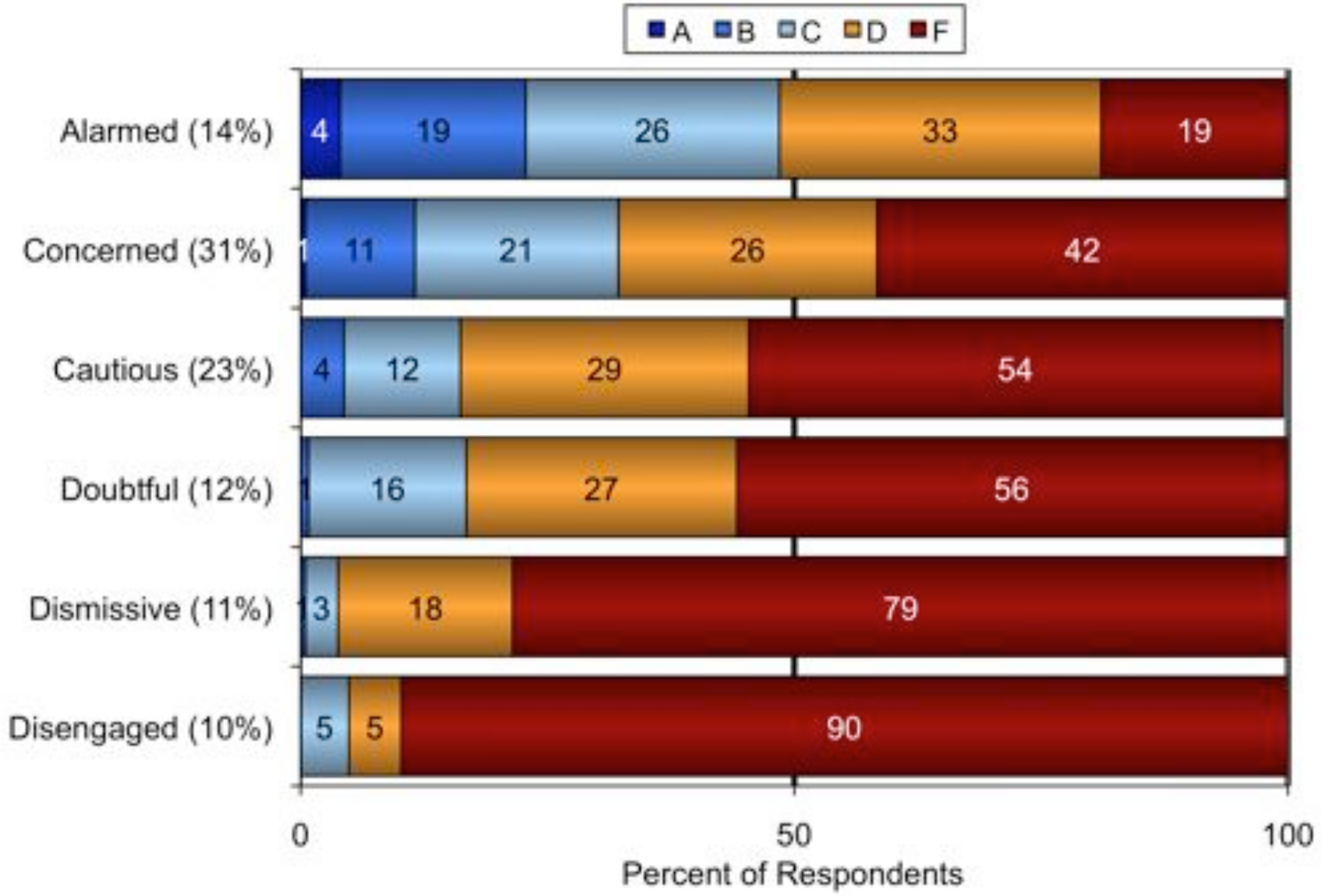






environment.yale.edu/climate

Knowledge about Climate Change: Straight Scale Grades



Leiserowitz *et al*., (2010)

Supporting the Development of Climate Literacy

K-20 Curriculum

Assessment

Media

Materials Development

Stakeholder Engagement

Instructional Practice

Educator Preparation

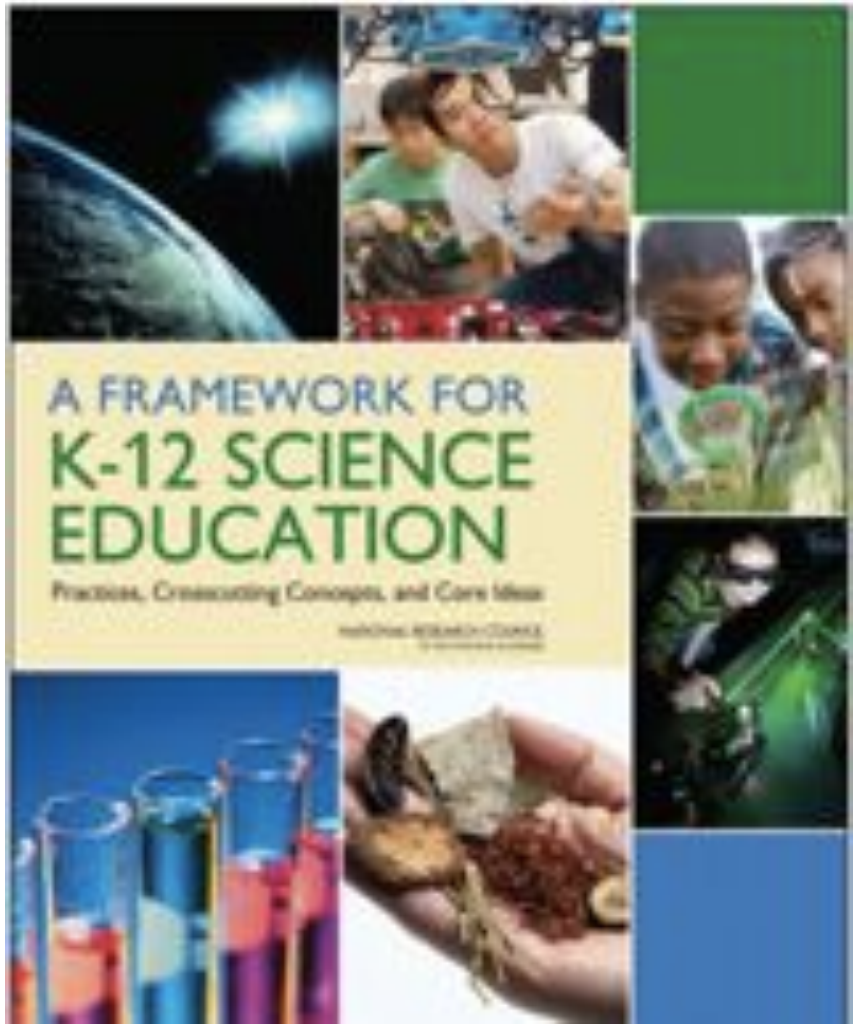
Extension

Training

Life-long Learning Progression

A CLIMATE-ORIENTED APPROACH FOR LEARNERS OF ALL AGES

Key Update: Improve Science Education Standards related to Climate for K-12



Core and Component Ideas related to Climate

Ecosystems: Interactions, Energy, and Dynamics
Ecosystems Dynamics, Functioning, and Resilience
Earth's Systems
The Roles of Water in Earth's Surface Processes
Weather and Climate
Earth and Human Activity
Natural Hazards
Human Impacts on Earth Systems
Global Climate Change
Engineering Design
Developing Possible Solutions
Optimizing the Design Solution
Links Among Engineering, Technology, Science, and Society
Influence of Engineering, Technology and Science on Society and the Natural World

Advancing Climate Literacy

United States Global Change Research Program

- Use the *"Climate Literacy: The Essential Principles of Climate Science"* (Version 2, March 2009) **framework to organize resource development.**
- Provide a focus within individual agency programs on **professional development** for formal educators.
- Establish a **voluntary national climate education curriculum** for K-16.
- Foster development of an agency-wide protocol for designating and labeling educational programs of merit (**Climate education collections**)
- Continue investments in **climate education research** that lead to more effective strategies.
- Develop new resources and tools that utilize "new media" and emerging outlets for widespread dissemination and **public engagement in climate.**
- Establish mechanisms for **monitoring public understanding of climate literacy, and related actions.**

Coordinating Federal Investments in Climate and Earth System Science Education
-- Developed from ongoing discussions within the US GCRP Ad-hoc Education Interagency Working Group

Update: Education Training and Outreach Related Grants Programs

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- NSF Informal Science Education (ISE)
- NSF Climate Change Education Partnership (CCEP) Program, Phase II
- NSF Discovery Research K-12 (DRK-12)
- NSF Transforming STEM Learning (TSL)
- NSF Decision, Risk and Management Sciences (DRMS)

- NOAA Environmental Literacy Grants program
- NOAA Sea Grant (2010 Sea Grant/Regional Team Climate Engagement)
- NOAA Coastal and Ocean Climate Applications (COCA)
- NOAA Sector Applications Research Program (SARP)

- NASA Global Climate Change Education
- NASA's Global Climate Change Education
- NASA Innovations in Climate Education

- USDA/NIFA Agriculture and Natural Resources Science for Climate Variability and Change
- Institute's Museums, Libraries Services (IMLS)
- EPA Environmental Education Grants

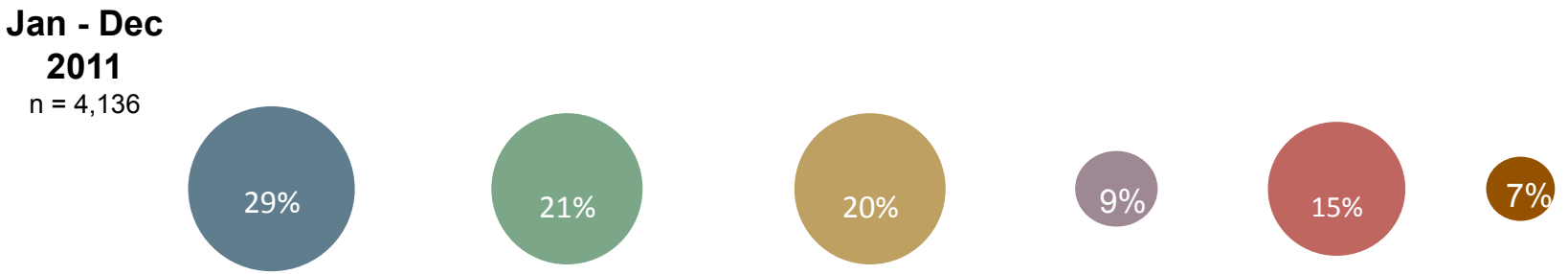
Key Update: Federal Coordinated Grants to Advance Climate Literacy

#s indicate poster # (see tab below)	Electronic media & tools	Video/Radio/Webcasts	Civic Engagement	Scientific Process	Exhibits	Field Trips/Fa... Program...		
Media Professionals (Print/Broadcast)	78	10, 68	78					
Graduate Students	68		78	12		76		
Undergraduate Students (including pre-service teachers)	49, 97, 10, 102, 78	46, 97, 10, 102	78	33, 67, 32, 32, 102	68	102, 10		
College/University Faculty	70, 46, 97, 73, 1, 64, 77, 78	97	78	65, 32, 68		38		
Scientists	14, 68		34, 78	45				
K-12 Administrators	64		78					
K-12 Students	[illegible]	10, 82	46, 85, 78	85, 94, 26, 19, 19, 2, 11	19	54, 20, 64, 100, 11	[illegible]	56, 19, 19, 28, 52, 11, 43
K-12 Educators (in-service)	[illegible]	62, 50, 10, 87	78	94, 85, 65, 16, 19, 80	19	37, 54, 64, 26, 36, 65, 105	[illegible]	[illegible]
Informal Educators	42, 8, 73, 94, 14, 19, 78, NC	42, 50, 15, 68	34, 8, 42, 8, 78	65, 19	[illegible]	64, 65, 100	95, 73, 19, 77, 78	[illegible]
Visitors to Informal Centers/Environments (National parks, etc.)	45, 34, 42, 88	3, 36	8, 34, 78	85, 19	[illegible]	38	19	22
Industry-specific sectors (e.g., agricultural, energy)			60, 78				88	25, 23
Legislators/Policy Makers	7, 1	7, 1	60, 25, 78			25	1, 77, 78	
Diverse and Under served Audiences/Indigenous Communities	64	1	60, 78, 5, 4			73, 46, 65	72, 67, 19, 66, 33, 76, 3, 6	65
Families	85, 85, 9, 10, 68, 80, 19	50, 85, 85, 1, 68, 68, 68	46, 9, 78	85, 19	19, 42, 80	56, 64, 85, 26, 68		56, 85
Other	86, 1, 4, 64, CMSS, 82, 44	50, 10, 85, 82	8, 68, 78, 25, 44			20, 34, 25		64

KEY	# of deliverables
(white)	0
(light green)	1 to 3
(light yellow)	4 to 6
(yellow)	7 to 9
(green)	10 to 12
(dark green)	more than 12

Update: An Example of Audience Differentiation

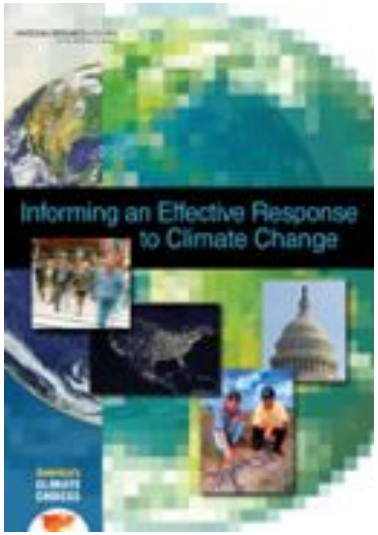
Audience Segmentation in Parks & Refuges



Source: Colorado State University, the National Park Service, US Fish and Wildlife Service and National Parks Conservation Association

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

America's CLIMATE CHOICES



"Education and communication are among the most powerful tools the nation has to bring hidden hazards to public attention, understanding, and action.

Recommendation 10:
The federal government should establish a national task force that includes formal and informal educators, government agencies, policymakers, business leaders, and scientists, among others, **to set national goals and objectives, and to develop a coordinated strategy to improve climate change education and communication.**

http://americasclimatechoices.org/

United States Global Change Research Program

Questions?

Frank Niepold

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March 14, 2011

Discussion / Q&A

- **Jan Middendorf (jmiddend@k-state.edu) & Christa Smith (christas@k-state.edu)**, Kansas State University's Office of Educational Innovation & Evaluation
- **John Baek (john.baek@noaa.gov)**, NOAA's Office of Education
- **Frank Niepold (frank.niepold@noaa.gov)**, NOAA's Climate Program Office
- **Ann Martin (ann.m.martin@nasa.gov**), NASA Langley Research Center
- Discussion!